"STOPPING" 240 MILES AN HOUR

*Ignitron arc-controlling tube of Westinghouse Elec. Co. flashes on for a millionth of a second to "stop" the motion of a rubber ball fired from an experimental gun at velocity of 240 miles an hour. The rubber bullet has struck a rubber sheet on whose surface is a wire. The breaking of the wire by the ball flashes on the new tube and makes possible the photography by its mercury vapor light.*

MEDICINE

## Smoking Mother Transmits Tobacco Products to Child

WHEN a mother smokes heavily before the birth of her child, some of the substance in tobacco smoke which makes the heart beat faster is transmitted to the blood of her unborn child and also makes its heart beat faster, Drs. Lester W. Sontag and Robert F. Wallace found in experiments conducted at Antioch College.

In their report (*American Journal of Obstetrics and Gynecology,* January) these physicians make no statement concerning harmful effects of maternal smoking upon the unborn child. But taking into consideration the work of other scientists on the effects of nicotine in the milk of smoking mothers, they consider it "not improbable" that maternal smoking before the birth of the child may have permanently harmful effects on the offspring.

A careful study of the newborn children of mothers who smoke heavily before their children are born is, they believe, the next step to be taken in order to reach a scientific conclusion as to whether mothers should or should not smoke while bearing and nursing children.

*Science News Letter, February 16, 1935*

CHEMISTRY

# Photographic Plates May Test Magneto-Optic Method

## Prof. Allison Hopes New Technique Will Make Possible Objective Confirmation of His Results

NEW support for the famous, but controversial, method of chemical analysis used by Prof. Fred Allison and many of his pupils at Alabama Polytechnic Institute will shortly be presented.

The much-debated method uses the magneto-optic apparatus for making the analysis. So sensitive is the apparatus, Prof. Allison claims, that he has been able to detect the presence of the still missing chemical elements 85 and 87 in sea water. And he predicted the existence of the new "heavy water" in the more ordinary variety before Prof. Harold C. Urey of Columbia University started his researches on this strange liquid which recently won for him the Nobel Prize award.

Newest phase of the long-extended controversy will be the report from Prof. Allison's laboratory that it is possible to take observations with photographic plates and thus remove the chance of human error incidental to the system in the past when observers had to be used. This will shortly be submitted to scientific journals.

Without going into the complex nature of the apparatus, it may be said that the identification of chemical elements is made by watching changes of intensity of light coming from a spark, which passes through solutions of materials to be studied. The observer sits in darkness and watches for maxima and minima in light intensity.

By manipulating moving contacts on long wires, known as a trolley, the observer correlates these minima with positions on the track, which finally are translated into chemical analysis of great sensitivity.

How well the apparatus works, and what it means if it does work, is the cause of much argument among scientists. Prof. Allison, his former pupils and colleagues appear to obtain uniformly successful results with the equipment. On the contrary, nearly as many other investigators cannot duplicate their results and believe the apparatus "fools" the observer into predicting things which are not so.

No one doubts the sincerity of the observations but the critical school of investigators believe that one may be "fooled" by the peculiarities of the apparatus and because of psychological tricks which are encountered in observing the weak light source.

Latest of the critical reports on the magneto-optic method appears in the *Physical Review* (Jan. 1, 1935) from H. W. Farwell and J. B. Hawkes of Columbia University. They could obtain no correlation of minima when the precaution was taken of keeping the observer from all knowledge of what his guiding wheel for the trolley meant in terms of the position of the trolley.

It was suspected that unconsciously the observer, by muscular memory or some other subconscious psychological happening, could reproduce positions on the trolley track by turning the driving wheel.

### Unwitting Errors

Report Farwell and Hawkes, "Observations of a single low intensity optical field produced by a spark are unreliable not only on account of physiological and psychological effects, but also because of variations in the spark discharge itself."

Prof. Allison when informed of this conclusion told Science Service:

"In recent months Dr. Hughes and Mr. Goslin of this laboratory have developed a photographic technique which is yielding results in confirmation of our claims for the magneto-optic method of analysis; namely that the minima are objective, reproducible and characteristic of compounds present in the solution. This is the first confirmation of the method that has been obtained by photographic means. They expect shortly to submit for publication a preliminary report of this work. This will constitute our reply to those who are reporting negative results."

*Science News Letter, February 16, 1935*